

# **WATX-Q770**

Intel Q77

User Manual

Rev.01, Feb. 2013

## Statement

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All product specifications are subject to change without prior notice.

## Packing List

- ☐ WATX-Q770
- ☐ Driver CD (Include user manual)

## Ordering Information

- ☐ 1 x PS2 Y Cable(KB and Mouse)
- ☐ 1 x LPT Cable with Bracket
- ☐ 1 x 2 Port COM Cable with Bracket
- ☐ 1 x 2 Port USB Cable with Bracket
- ☐ 1 x SATA Cable

# Contents

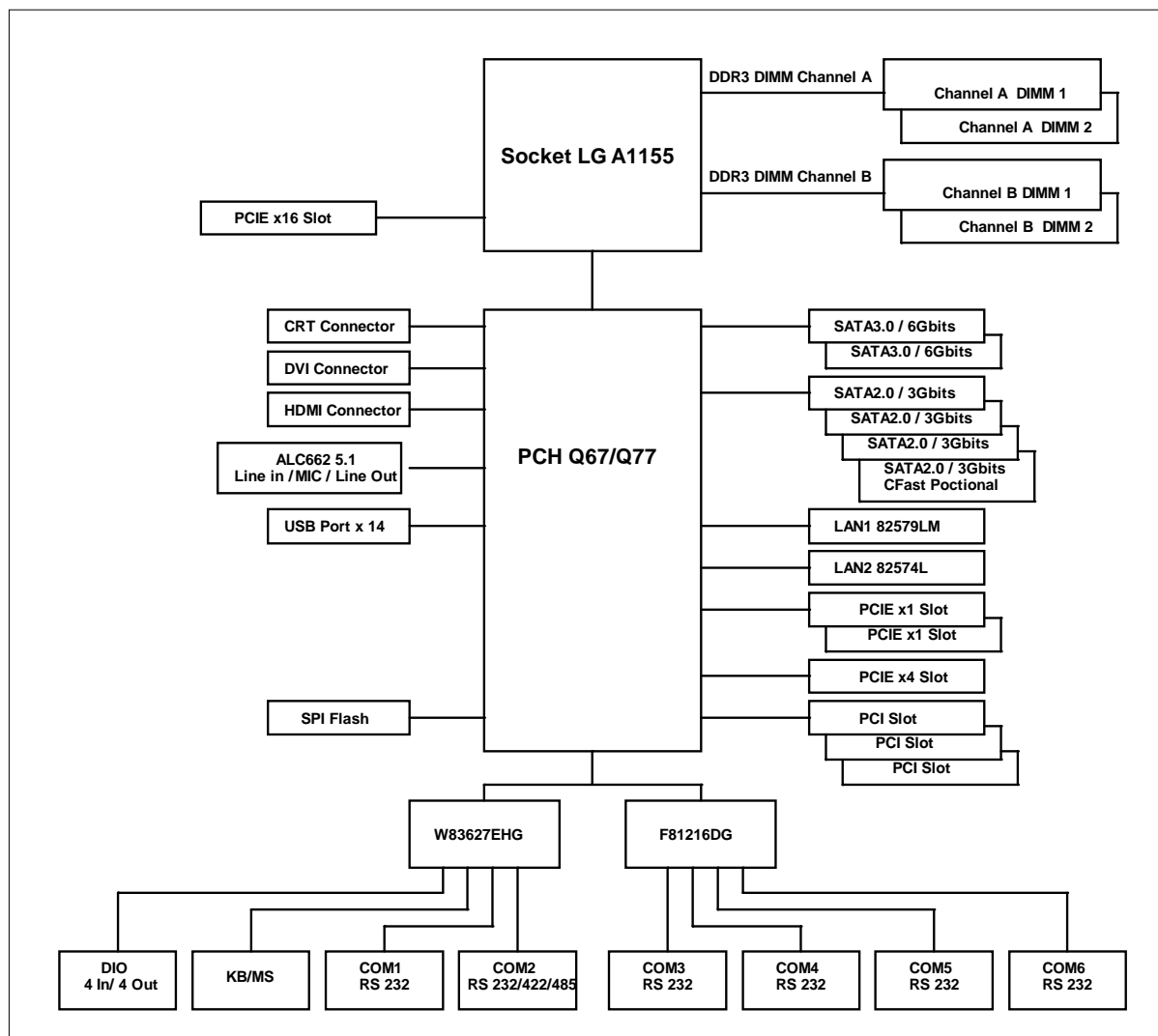
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# Chapter 1 Product Information

This chapter introduces the product features, jumper and connector information.

## 1.1 Block Diagram

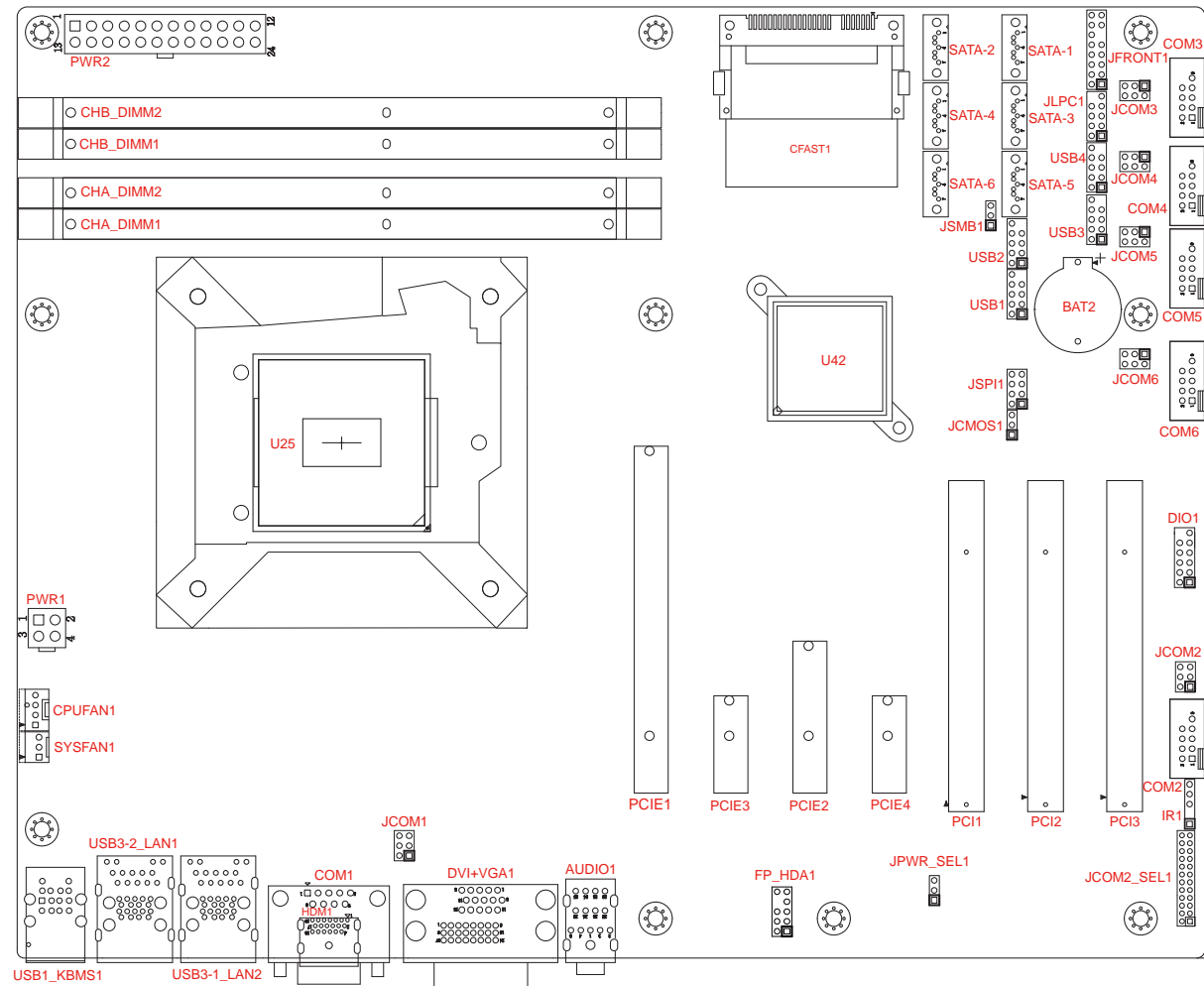


## 1.2 Features

System Processor/ Chipsets	Processor	Intel Core i7/i5/i3 processors
		LGA-1155 Socket
	Chipset	Intel® Q77 PCH
	BIOS	AMI
Memory	Technology	DDR3 1600 MHz SDRAM
	Max. Capacity	Up to 16GB DDR3 DRAM
	Socket	4 x 240-Pin DIMM
Display	Chipset	Intel HD Graphics
	VRAM	Shared system memory up to 1GB, total system memory shared 2GB max. video memory.
	Resolution	Analog Display: Up to 2048 x 1536
	Dual Display	CRT+DVI, CRT+HDMI
Ethernet	Interface	Dual 10/100/1000 Mbps
	Controller	LAN1: Intel 82579LM, LAN2: Intel 82574L
Audio	Interface	High Definition Audio
	Controller	Realtek ALC662 HD CODEC
SATA	Max. Data Transfer Rates	600MB/s (SATA 3.0 x 2) 300MB/s (SATA 2.0 x 4)
Expansion Slot	PCIe x 16	1
	PCIe x 4	1
	PCIe x 1	2
	PCI	3
Rear I/O	PS/2	1(KB/MS)
	VGA	1
	COM	1xRS-232
	LAN	2 x RJ45

	USB	Q770: USB2.0 x 2 + USB3.0/2.0 x 4
	Audio	3 (Line In, Line out, Mic In)
	DVI	1
	HDMI	1
Onboard Connector	FAN	CPU FAN and System FAN
	USB2.0	8
	SATA	Q770: SATAIIx4, SATAIIIx2 (One SATAII Option with C-Fast)
	C-Fast	1 (option with one SATAII Port)
	COM	5 (4xRS-232, 1xRS232/RS422/RS485)
	DIO	4 in/4 out
Power	ATX	24 Pin + 4Pin ATX Connector
Watchdog Timer	Interval	Programmable 1~255 sec./min.
	Output	System reset
Environment *Note1	Operating Temp.	-5°C~60°C (23°F~140°F)
	Storage Temp.	-20°C~80°C (-68°F~176°F)
	Relative Humidity	0%~ 95% (non-condensing)
Form Factor	Dimension (L*W)	ATX 305mm x 244mm (12" x 9.6")

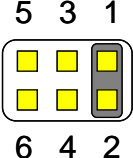
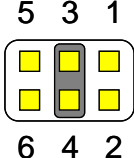
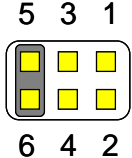
## 1.3 PCB Layout



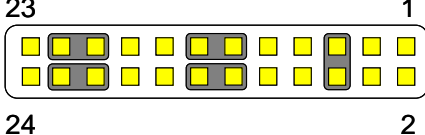
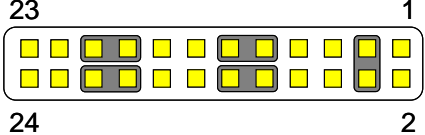


## 1.4 Jumper Setting

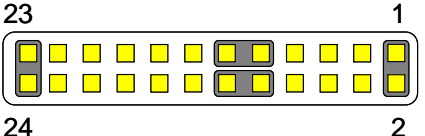
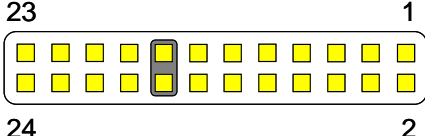
### JCOM1/JCOM2/JCOM3/JCOM4/JCOM5/JCOM6: (5V/12V/RI) Select

Pin No.	1-2	3-4	5-6
Function	+5V	Modem Ring In (Default)	+12V
Jumper Setting			

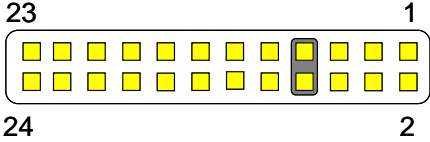
### JCOM2\_SEL1: COM2(RS-232/RS-422/RS-485) Select(1/3)

Pin No.	5-6, 11-13, 12-14, 19-21, 20-22	3-4, 9-11, 10-12, 17-19, 18-20
Function	RS-232(Default)	RS-422
Jumper Setting		

### JCOM2\_SEL1: COM2(RS-232/RS-422/RS-485) Select(2/3)

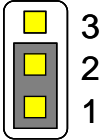
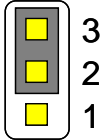
Pin No.	1-2, 9-11, 10-12, 23-24	15-16
Function	RS-485	RS-422 RX 100Ω Termination
Jumper Setting		

**JCOM2 SEL1: COM2(RS-232/RS-422/RS-485) Select(3/3)**

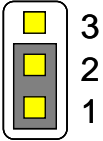
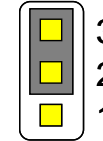
Pin No.	7-8	
Function	RS-422 TX 100Ω/RS-485 Termination	
Jumper Setting		

Note: Not Recommended for RS-422 TX 100Ω Termination

**JCMOS1: CMOS Clear**

Pin No.	1-2	2-3
Function	Normal Operation(Default)	Clear CMOS Contents
Jumper Setting		

**JPWR SEL1: AT/ATX Mode Select**

Pin No.	1-2	2-3
Function	AT Mode	ATX Mode(Default)
Jumper Setting		

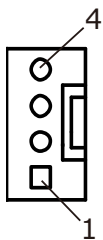
## 1.5 Connector Function List

Connector	Function	Note
AUDIO1	MIC/Line-in/out connector	
COM1	D-SUB9 serial port connector	
COM2, COM3 COM4, COM5 COM6	Serial port connector with 2.54mm box header	
CHA_DIMM1 CHA_DIMM2 CHB_DIMM1 CHB_DIMM2	DDR3 DIMM connector	
CFAST1	CFAST connector	CFAST1 option with SATA6
CPUFAN1	CPUFAN 4-pin 2.54mm connector	
DIO1	Digital input/output with pin-header	
DVI+VGA1	DVI and VGA connector.	
FP_HDA1	MIC/Head phone	
HDMI1	HDMI connector	
IR1	IrDA	
JFRONT1	Front panel with 2.54mm pin-header	
JSMB1	SM-BUS	
PCI1/PCI2/PCI3	PCI slot	
PCIE1	PCIE X16 slot	
PCIE3/PCIE4	PCIE X1 slot	
PCIE2	PCIE X4 slot	
PWR1	ATX 2x2 connector	
PWR2	ATX 2x12 connector	
SATA-1, SATA-2	SATA III connector	
SATA-3, SATA-4 SATA-5, SATA-6	SATA II connector	SATA6 option with CFAST1
SYSFAN1	System FAN 3-pin connector	

U25	LGA1155 CPU socket	
USB1, USB2 USB3, USB4	USBx2 with 2.54mm pin-header	
USB1_KBMS1	USBx2, PS2 keyboard and PS2 mouse connector(PS2 Y-Cable)	
USB3-2_LAN1 USB3-2_LAN2	USB2x2(WATX-Q670) with RJ45 LAN or USB3x2(WATX-Q770) with RJ45 LAN	

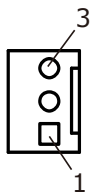
## 1.6 Internal Connector Pin Define

### **CPUFAN1: System FAN 4 Pin connector**



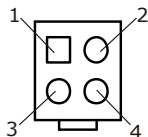
Pin No.	Signal
1	Ground
2	Fan Power(+12V)
3	Speed Sense
4	Control

### **SYSFAN1: System FAN 3 Pin connector**



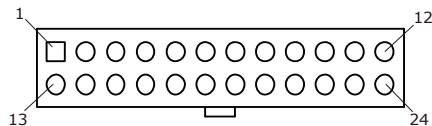
Pin No.	Signal
1	Ground
2	Fan Power(+12V)
3	Speed Sense

### **PWR1: ATX 2x2 +12V Input**

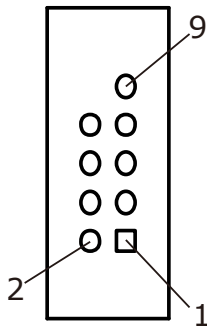


Pin No.	Signal	Pin No.	Signal
1	Ground	3	+12V
2	Ground	4	+12V

### **PWR2: ATX 2x12 Power Input**

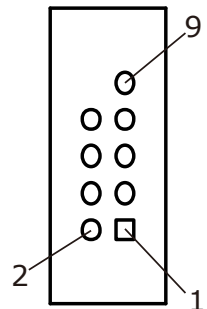


Pin No.	Signal	Pin No.	Signal
13	+3.3V	1	+3.3V
14	-12V	2	+3.3V
15	Ground	3	Ground
16	PS ON	4	+5V
17	Ground	5	Ground
18	Ground	6	+5V
19	Ground	7	Ground
20	NC	8	Power ok
21	+5V	9	+5V Stand By
22	+5V	10	+12V
23	+5V	11	+12V
24	Ground	12	+3.3V



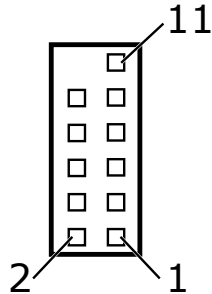
### **COM2: Serial Port with Box-header(2.54mm)**

Pin No.	Signal	Pin No.	Signal
1	DCD/RS485 Data-/RS422 TX-	2	DSR
3	RXD/RS485 Data+/RS422 TX+	4	RTS
5	TXD/RS422 RX+	6	CTS
7	DTR/RS422 RX-	8	RI/+5V/+12V
9	Ground	10	Key Pin



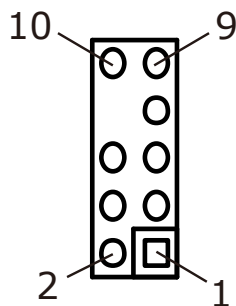
### **COM3, 4, 5, 6: Serial Port with Box-header(2.54mm)**

Pin No.	Signal	Pin No.	Signal
1	DCD	2	DSR
3	RXD	4	RTS
5	TXD	6	CTS
7	DTR	8	R/+5V/+12V
9	Ground	10	Key Pin



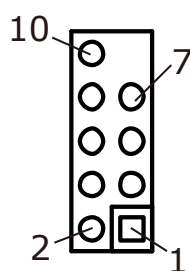
### **DIO1: Digital I/O with Pin-header(2.54mm)**

Pin No.	Signal	Pin No.	Signal
1	DIO-Out0 bit0	2	DIO-In0 bit2
3	DIO-Out1 bit1	4	DIO-In1 bit3
5	DIO-Out2 bit6	6	DIO-In2 bit4
7	DIO-Out3 bit7	8	DIO-In3 bit5
9	+12V	10	+5V
11	Ground	12	Key Pin



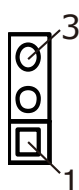
### **FP\_HDA1: MIC/Line In/Out with Pin Header(2.54mm)**

Pin No.	Signal	Pin No.	Signal
1	MIC-IN-L	2	Ground
3	MIC-IN-R	4	HDA_FP_DET#
5	Head Phone-R	6	MIC-JD
7	FP SENSE	8	Key Pin
9	Head Phone-L	10	Head Phone-JD



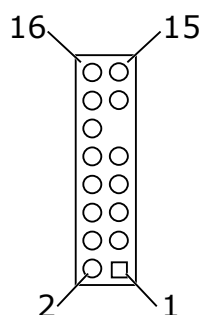
#### **USB1/2/3/4: USB Port x2 with Pin-header(2.54mm)**

Pin No.	Signal	Pin No.	Signal
1	USB Power(+5V)	2	USB Power(+5V)
3	USB DATA4N	4	USB DATA5N
5	USB DATA4P	6	USB DATA5P
7	USB Ground	8	USB Ground
9	Key Pin	10	Shield Ground



#### **JSMB1: SM BUS 2.54mm Pin Header**

Pin No.	Signal
1	SMB_CLK
2	SMB_DATA
3	Ground



#### **JFRONT1: Front Panel with Pin-header (2.54mm)**

Pin No.	Signal	Pin No.	Signal
1	+5V (470 Ohm) (Power LED+)	2	+5V (470 Ohm) (HDD LED+)
3	NC	4	HDD LED# (HDD LED-)
5	Ground (Power LED-)	6	5VSB (470 Ohm) (Suspend LED+)
7	RESET#, (Reset Button Pin1)	8	Suspend LED#, (Suspend LED-)
9	Ground (Reset Button Pin2)	10	FSPK# (Beep) (Speaker-)
11	NC	12	NC
13	SW_PWR# (Power ON Button Pin1)	14	NC
15	Ground (Power ON Button Pin2)	16	+5V (Speaker+)

## Chapter 2 BIOS Setup

This chapter introduces BIOS setup information.

Power on or reboot the system board, when screen appears message as “Press DEL to enter SETUP“. Press <DEL> key to run BIOS SETUP Utility.

Note: The BIOS configuration for reference only, it may subject to change without prior notice.

### 2.1 Main Menu

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.					
Main	Advanced	Chipset	Boot	Security	Save & Exit
<b>BIOS Information</b>		American Megatrends		Choose the system default language	
BIOS Vendor		4.6.5.3			
Core Version		UEFI 2.3; PI 1.2			
Compliance		1APTC 0.24 X64			
Project Version		WATX-Q770			
Model Name		RA03			
BIOS Version		11/02/2012 17:47:05			
Build Date and Time					
<b>Processor Information</b>		Sandy Bridge			
Name		Intel(R) Pentium(R) CPU			
Brand String		2900MHz			
Frequency					
Total Memory		2048 MB (DDR3)			
Memory Frequency		1333 Mhz			
System Language		[English]			
System Date		[Thu 12/04/2012]			
System Time		[10:01:00]			
				→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	

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#### ☐ Date

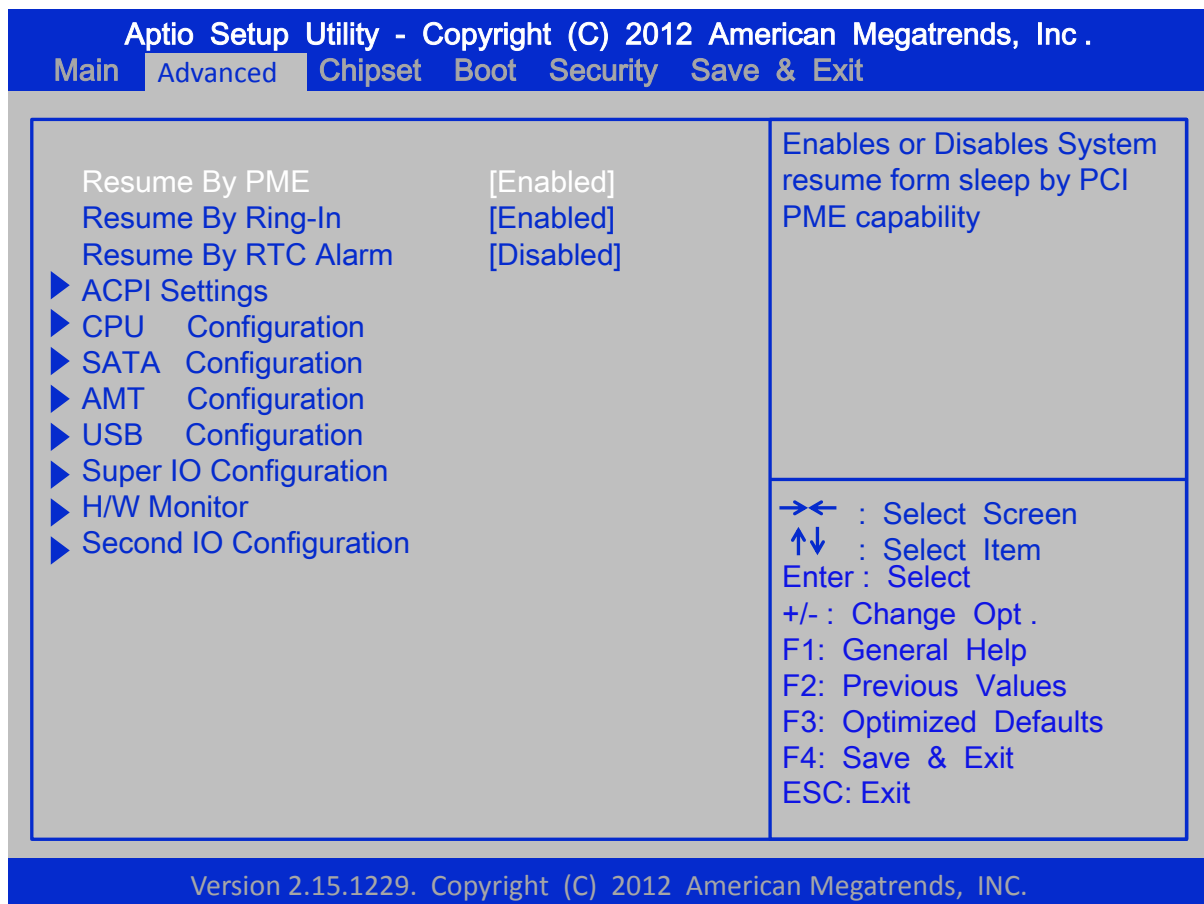
Set system date.

#### ☐ Time

Set system time.



## 2.2 Advanced Menu



### ☐ Resume By PME

Disable/enable Resume by PME.

Choices: Disabled, Enabled.

### ☐ Resume By Ring-In

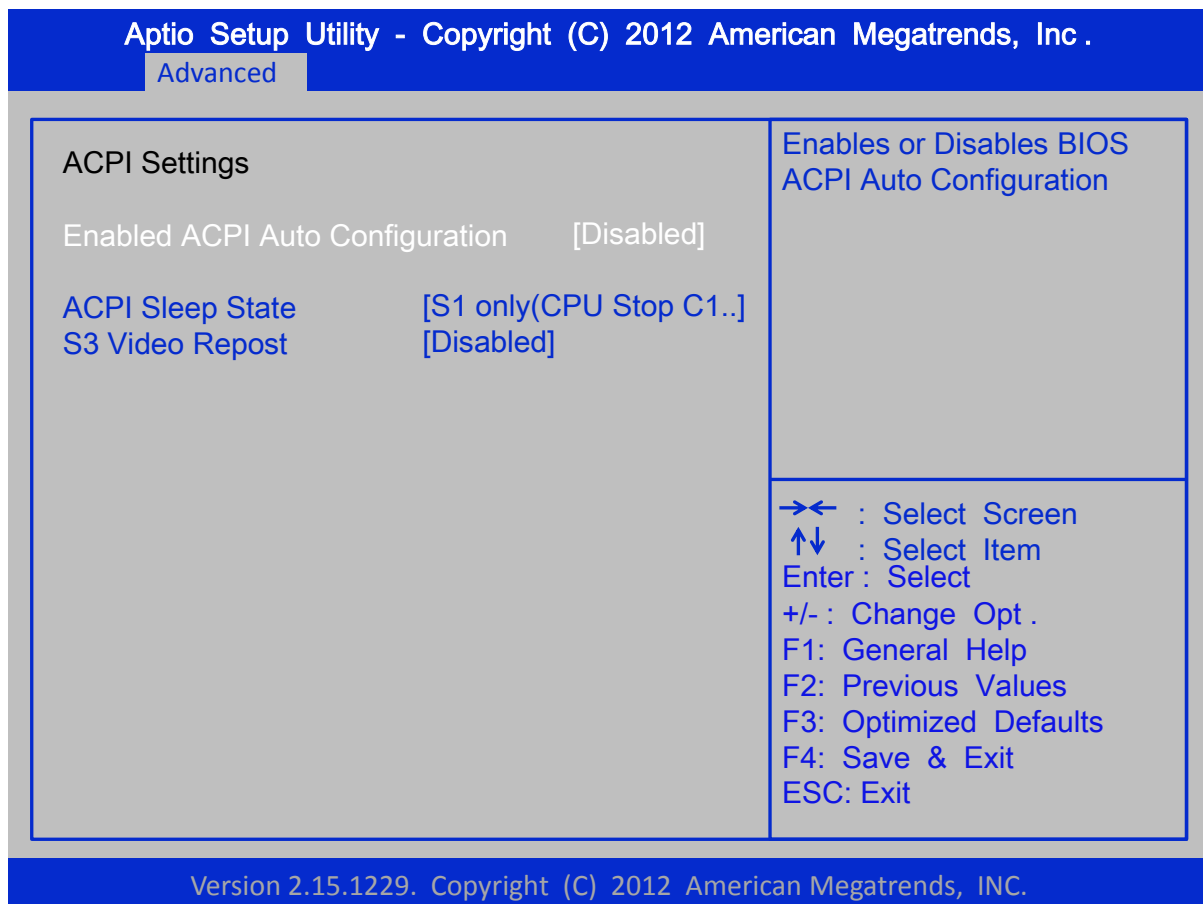
Choices: Disabled, Enabled.

### ☐ Resume By RTC Alarm

The item is used to enable/disable RTC Alarm to generate a wake up.

Choices: Disabled, Enabled.

## 2.3 ACPI Settings



### ☐ Enables ACPI Auto Configuration

The item allows users to enable or disable the ACPI Auto Configuration.

Choices: Disabled, Enabled.

### ☐ ACPI Sleep State

Select the highest ACPI sleep state the system will enter, when SUSPEND button is pressed.

### ☐ S3 Video Repost

The item runs the video option ROM on a boot from the S3 state again.

Choices: Disabled, Enabled.

## 2.4 CPU Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
<p>CPU Configuration</p> <p>Intel(R) Pentium(R) CPU G850 @ 2.90GHz</p> <p>CPU Signature                      206a7</p> <p>Microcode Patch                    28</p> <p>Max CPU Speed                    2900 MHz</p> <p>Min CPU Speed                    1600 MHz</p> <p>CPU Speed                        2900 MHz</p> <p>Processor Cores                    2</p> <p>Intel HT Technology                Not Supported</p> <p>Intel VT-x Technology              Supported</p> <p>Intel SMX Technology              Not Supported</p> <p>64-bit                                Supported</p> <p>L1 Data Cache                    32 KB x 2</p> <p>L1 Code Cache                    32 KB x 2</p> <p>L2 Cache                          256 KB x 2</p> <p>L3 Cache                          3072 KB</p>		
		<p>→← : Select Screen</p> <p>↑↓ : Select Item</p> <p>Enter : Select</p> <p>+/- : Change Opt .</p> <p>F1: General Help</p> <p>F2: Previous Values</p> <p>F3: Optimized Defaults</p> <p>F4: Save &amp; Exit</p> <p>ESC: Exit</p>

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## 2.5 SATA Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
SATA Controller(s)	[Enabled]	Enable or disable SATA Device
SATA Mode Selection	[IDE]	
IDE Legacy / Native Mode Selection	[Native]	
Serial ATA Port 0	Empty	→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Software Preserve	Unknown	
Serial ATA Port 1	Empty	
Software Preserve	Unknown	
Serial ATA Port 2	Empty	
Software Preserve	Unknown	
Serial ATA Port 3	Empty	
Software Preserve	Unknown	
Serial ATA Port 4	Empty	
Software Preserve	Unknown	
Serial ATA Port 5	Empty	
Software Preserve	Unknown	

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### ☐ SATA Controller

The item allows users to enable or disable SATA devices.

Choices: Disabled, Enabled.

### ☐ SATA Mode Selection

The item allows users to disable or set the onchip serial SATA controller mode.

Choices: Disable, IDE, Raid, AHCI.

### ☐ IDE Legacy/Native Mode Selection

The item enables support for either legacy or native mode.

Choices: Native and Legacy.

## 2.6 AMT Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
Intel AMT	[Enabled]	Enable/Disable Intel (R) Active Management Technology BIOS Extension. Note : iAMT H/W is always enabled. This option just controls the BIOS extension execution. If enabled, this requires Additional firmware in the SPI device
BIOS Hotkey Pressed	[Disabled]	
MEBx Selection screen	[Disabled]	
Hide Un-Configure ME Confirmation	[Disabled]	
MEBx Debug Message Output	[Disabled]	
Un-Configure ME	[Disabled]	
Amt Wait Timer	0	
Disable ME	[Enabled]	
ASF	[Enabled]	
Activate Remote Assistance Process	[Disabled]	
USB Configure	[Enabled]	→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
PET Progress	[Enabled]	
AMT CIRA Timeout	0	

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### ☐ Intel AMT

The option controls the BIOS extension execution. If enabled, this requires additional firmware in the SPI device.

Choices: Disabled, Enabled.

### ☐ BIOS Hotkey Pressed

If the setting is default, the option is "Disabled".

Choices: Disabled, Enabled.

### ☐ MEBx Selection screen

The item allows users to enable or disable MEBx selection screen.

Choices: Disabled, Enabled.

### ☐ Hide Un-Configure ME Confirmation

The item allows users to hide un-configured ME without password confirmation prompt.

Choices: Disabled, Enabled.

☐ **MEBx Debug Message Output**

The item allows users to enable or disable MEBx debug message.

Choices: Disabled, Enabled.

☐ **Un- Configure ME**

If the setting is default, the option is “Disabled”.

Choices: Disabled, Enabled.

☐ **Amt Wait Timer**

The item is set to wait time to enter AMT to 0.

☐ **Disable ME**

The item temporarily sets the Management Engine to soft disable.

Choices: Disabled, Enabled.

☐ **ASF**

The item enables or disables Alert Specification Format.

Choices: Disabled, Enabled.

☐ **Activate Remote Assistance Process**

The item is for trigger CRT boot.

Choices: Disabled, Enabled.

☐ **USB Configure**

The item enables legacy USB support.

Choices: Disabled, Enabled.

☐ **PET Progress**

The item allows users to enable or disable PET events progress to receive PET events or not.

Choices: Disabled, Enabled.

☐ **AMT CIRA Timeout**

Set the timeout for MPS connection to be established

## 2.7 USB Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<b>USB Configuration</b>  <b>USB Devices</b> 1 Keyboard, 2 Hubs  Legacy USB Support [Enabled] USB3.0 Support [Enabled] XHCI Hand-off [Enabled] EHCI Hand-off [Disabled]	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connect. DISABLE option will keep USB devices available only for EFI applications.
<b>USB hardware delays and time-outs:</b> USB transfer time-out [20 sec] Device reset time-out [20 sec] Device power-up delay [Auto]	→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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### ☐ Legacy USB Support

The item allows users to enable or disable legacy support about USB devices.

Choices: Disabled, Enabled, Auto.

### ☐ USB3.0 Support

The item allows users to enable or disable USB3.0 controller support.

### ☐ XHCI Hand-pff

The item is a workaround for OSes without XHCI hand-off support.

Choices: Disabled, Enabled.

### ☐ EHCI Hand-pff

The item is a workaround for OSes without EHCI hand-off support.

Choices: Disabled, Enabled

☐ **USB Transfer time-out**

The item is for the time-out value for Control, Bulk, and Interrupt transfers.

☐ **Device reset time-out**

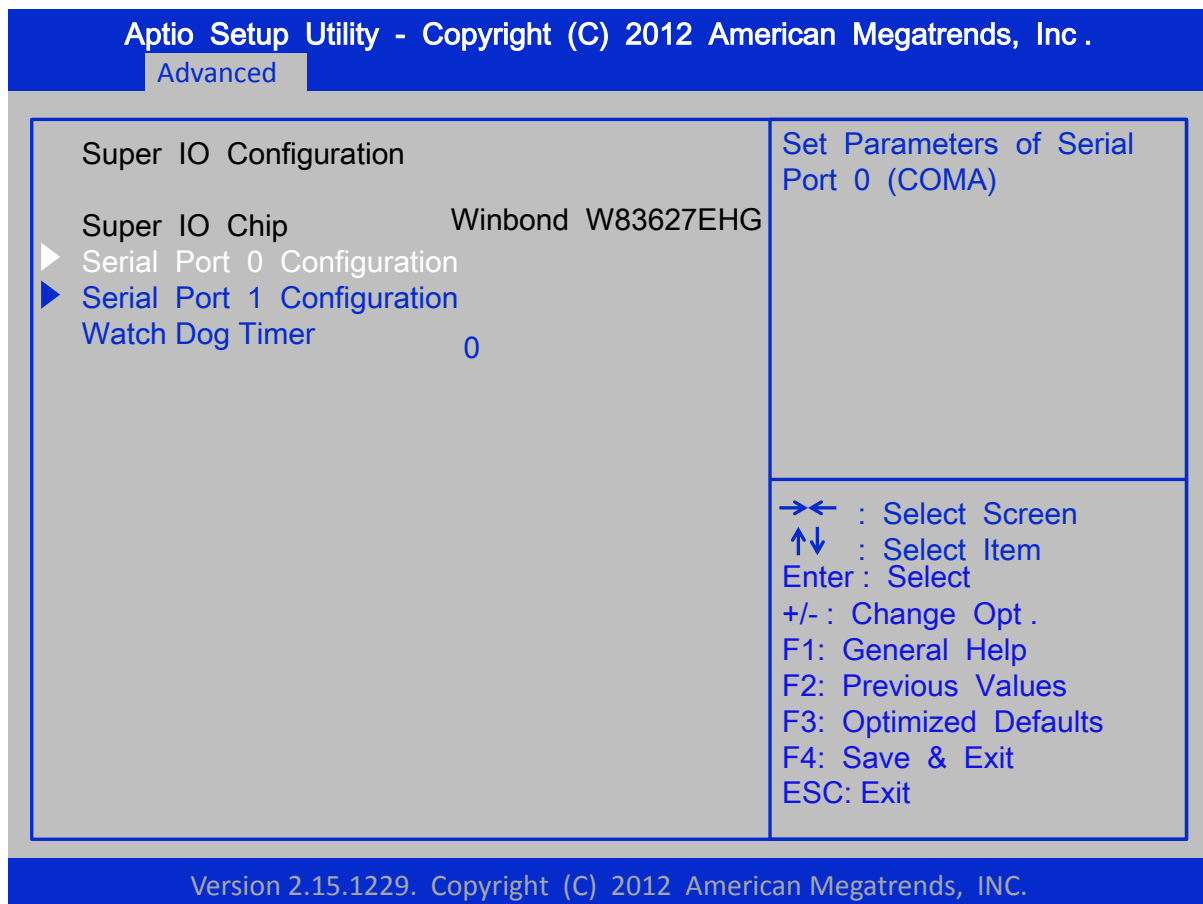
The item is for USB mass storage device start unit command time-out.

☐ **Device power-up delay**

The item is for maximum time the device will take before it properly reports itself to the host controller.



## 2.8 Super IO Configuration



☐ **Serial Port 0 Configuration**

☐ **Serial Port 1 Configuration**

☐ **Watch Dog Timer**

This option will determine watch dog timer.

## 2.9 Serial Port 0 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<b>Serial Port 0 Configuration</b>	
Serial Port	[Enabled]
Device Settings	IO=3F8h; IRQ=4;
Change Settings	[Auto]
<div>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>	

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### ☐ **Serial Port**

Use this option to enable or disable the serial port.

### ☐ **Device Settings**

Use this option to show the serial port IO port address and interrupt address.

### ☐ **Change Settings**

Use this option to change **COM** address as required.

## 2.10 Serial Port 1 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 1 Configuration	
Serial Port Device Settings	[Enabled] IO=2F8h; IRQ=3;
Change Settings Device Mode	[Auto] [Serial Port Functio...]
Enable or Disable Serial Port (COM)	
<div>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>	

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### ☐ Serial Port

Use this option to enable or disable the serial port.

### ☐ Device Settings

Use this option to show the serial port IO port address and interrupt address.

### ☐ Change Settings

Use this option to change **COM** address as required.

### ☐ Device Mode

The item is serial **port** mode function.

## 2.11 Pc Health Setting

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Advanced		
<b>Pc Health Status</b>		Both of CPU Smart fan and SYSTEM Smart fan control item
SYSTEM Temperature : +29 C CPU Temperature : +67 C CPU FAN Speed : 2430 RPM SYSTEM FAN Speed : N/A CPUVCORE : +1.008 V +12 V : +12.196V +1.05 V : +1.064 V +1.5 V : +1.536 V +5 V : +5.120 V +3.3 V : +3.296 V VBAT (V) : +3.216 V 3.3VSB (V) : +3.280 V  CPU smart fan control [Disabled] System smart fan control [Disabled]		
		 →← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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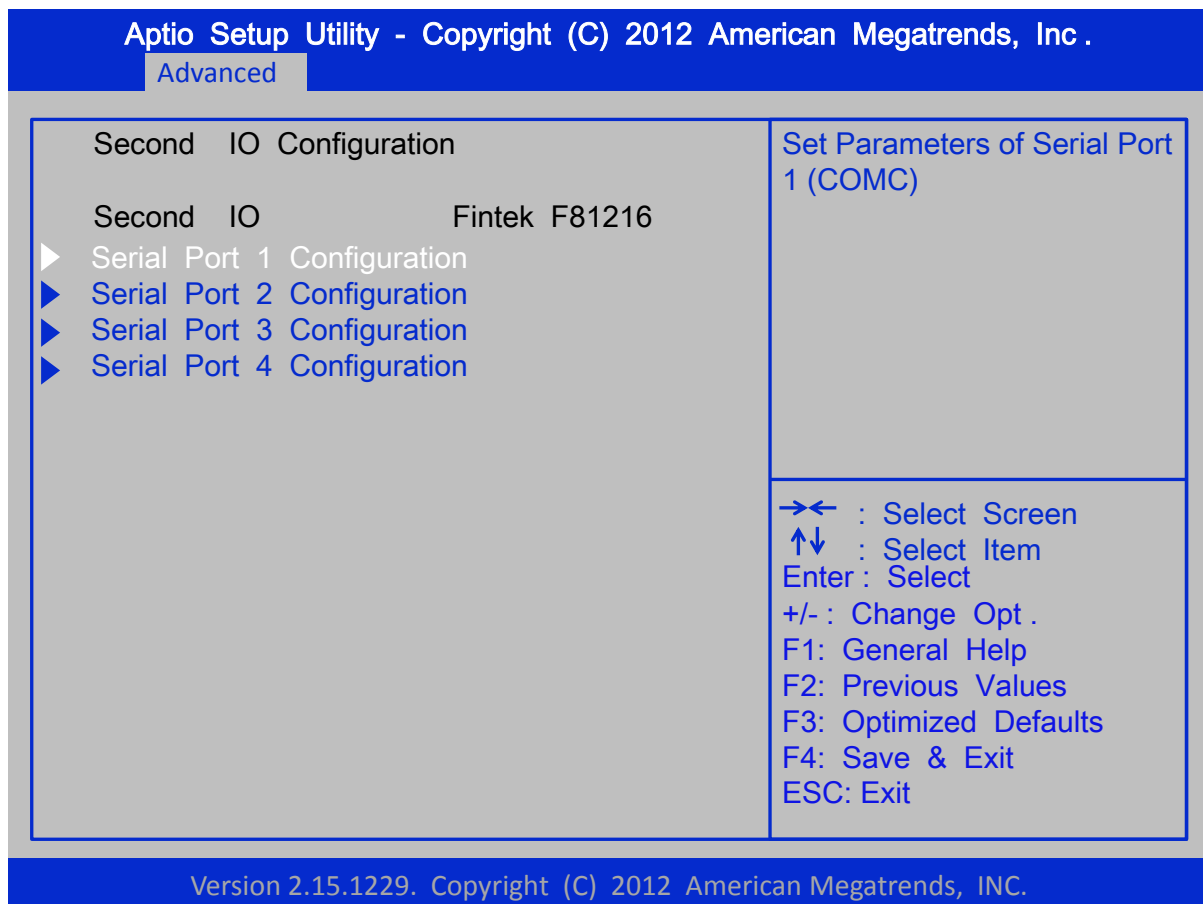
### ☐ CPU smart Fan Control

The item allows users to enable or disable the CPU smart fan feature.

### ☐ System smart Fan Control

The item allows users to enable or disable the System smart fan feature.

## 2.12 Second IO Configuration



☐ **Serial Port 1 Configuration**

☐ **Serial Port 2 Configuration**

☐ **Serial Port 3 Configuration**

☐ **Serial Port 4 Configuration**

## 2.13 Serial 1 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<b>Serial Port 1 Configuration</b>	
Serial Port	[Enabled]
Device Settings	Reset Required
Change Settings	[IO=3E8h; IRQ=5;]
Enable or Disable Serial Port (COM)	
<div>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>	

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### ☐ **Serial Port**

Use this option to enable or disable the serial port.

### ☐ **Device Settings**

Use this option to change the serial port IO port address and interrupt address.

### ☐ **Change Settings**

The item is to change COM address as required.

## 2.14 Serial Port 2 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
Serial Port 2 Configuration	
Serial Port	[Enabled]
Device Settings	Reset Required
Change Settings	[IO=2E8h; IRQ=5;]
Enable or Disable Serial Port (COM)	
<div>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>	

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### ☐ Serial Port

Use this option to enable or disable the serial port.

### ☐ Device Settings

Use this option to change the serial port IO port address and interrupt address.

### ☐ Change Settings

The item is to change COM address as required.

## 2.15 Serial Port 3 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<b>Serial Port 3 Configuration</b>	
Serial Port	[Enabled]
Device Settings	Reset Required
Change Settings	[IO=3E0h; IRQ=5;]
Enable or Disable Serial Port (COM)	
<div>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>	
Version 2.15.1229. Copyright (C) 2012 American Megatrends, INC.	

### ☐ **Serial Port**

Use this option to enable or disable the serial port.

### ☐ **Device Settings**

Use this option to change the serial port IO port address and interrupt address.

### ☐ **Change Settings**

The item is to change COM address as required.



## 2.16 Serial Port 4 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.	
Advanced	
<b>Serial Port 4 Configuration</b>	
Serial Port	[Enabled]
Device Settings	Reset Required
Change Settings	[IO=E0h; IRQ=5;]
Enable or Disable Serial Port (COM)	
<div>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>	
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### ☐ **Serial Port**

Use this option to enable or disable the serial port.

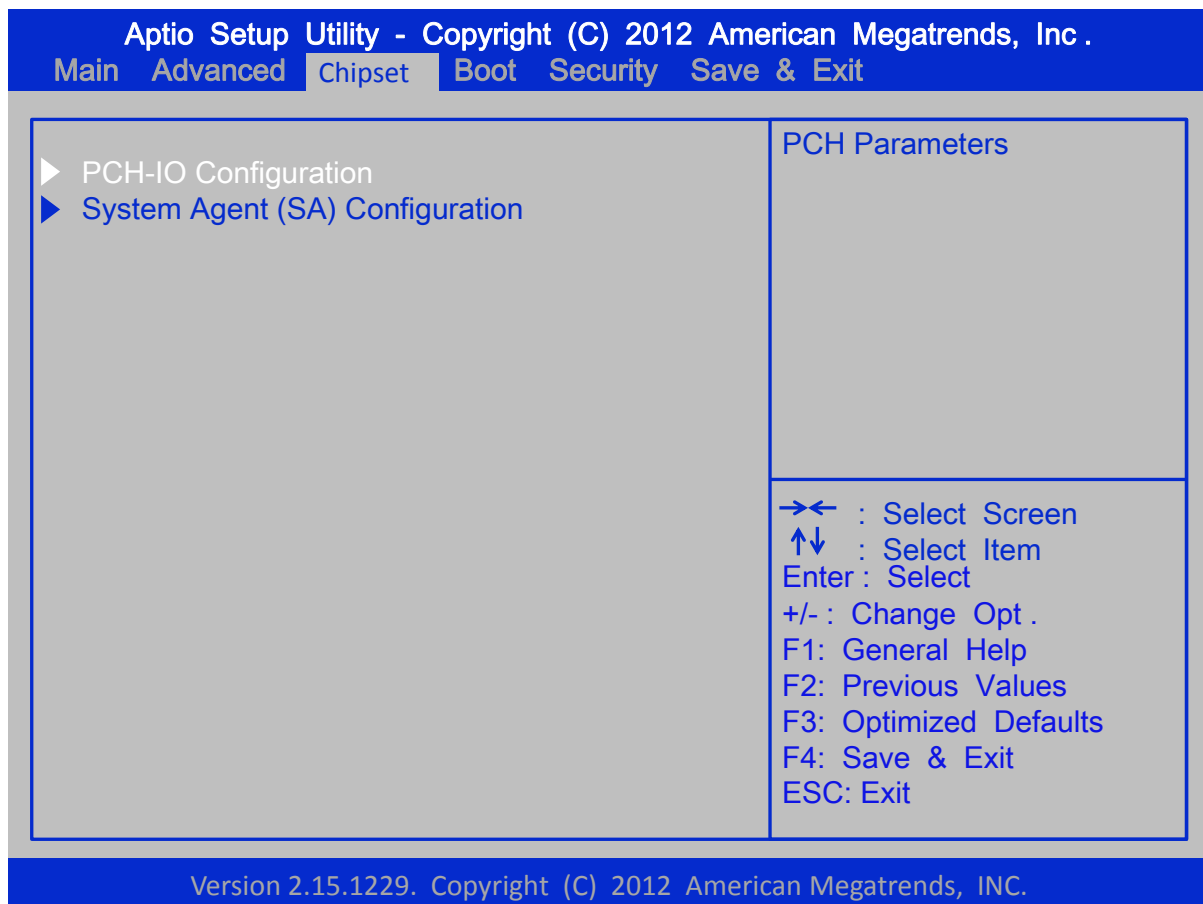
### ☐ **Device Settings**

Use this option to change the serial port IO port address and interrupt address.

### ☐ **Change Settings**

The item is to change COM address as required.

## 2.17 Chipset



☐ **PCH-IO Configuration**

☐ **System Agent(SA) Configuration**

## 2.18 Azalia

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
Azalia	[Auto]	Control Detection of the Azalia device. Disabled = Azalia will be unconditionally disabled Enabled = Azalia will be Unconditionally Enabled Auto = Azalia will be enabled If present , disabled otherwise
Azalia Internal HDMI Codec	[Enabled]	
PCH LAN Controller	[Enabled]	
Wake on LAN	[Enabled]	
		→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1229. Copyright (C) 2012 American Megatrends, INC.		

### ☐ Azalia

This item allows user to enable or disable azalea device.

### ☐ Azalia Intel HDMI Codec

This item allows user to enable or disable the Azalia internal HDMI/DisplayPort codec.

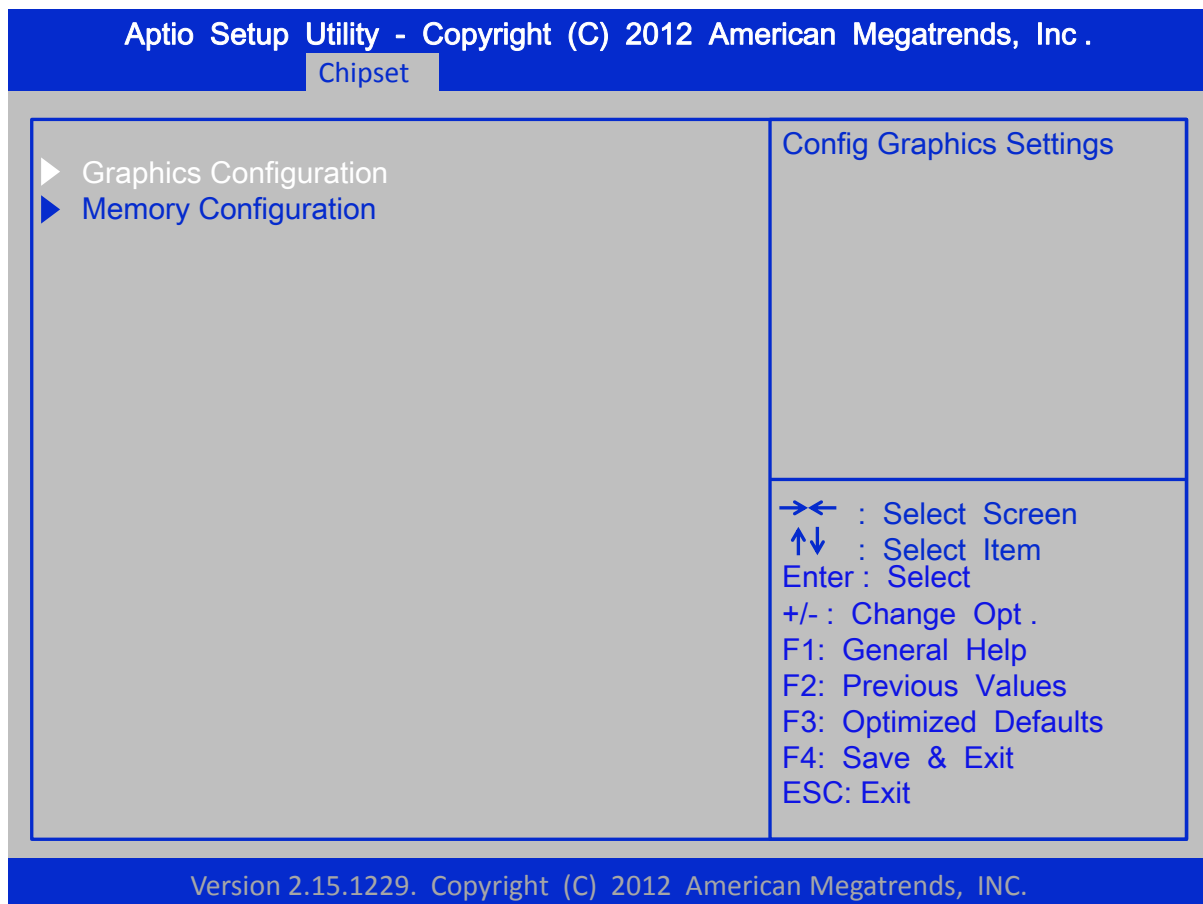
### ☐ PCH LAN Controller

This item allows user to enable or disable onboard Network Interface Card (NIC).

### ☐ Wake on LAN

This item allows user to enable or disable integrated LAN to wake the system.

## 2.19 System agent Configuration



☐ **Graphics Configuration**

☐ **Memory Configuration**

## 2.20 Graphics Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
Graphics Configuration		Graphics turbo IMON current Values supported (14-31)
IGFX VBIOS Version	2137	
IGfx Frequency	850 MHz	
Graphics Turbo IMON Current	31	
Primary Display	[Auto]	
Internal Graphics	[Auto]	
GTT Size	[2MB]	
Aperture Size	[256MB]	
DVMT Pre-Allocated	[64M]	
DVMT Total Gfx Mem	[256M]	
Gfx Low Power Mode	[Enabled]	
Graphics Performance Analyzers	[Disable]	
Primary IGFX Boot Display	[VBIOS Default]	
		→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

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### ☐ Primary Display

This item allows users to select which graphics controller to use as the primary boot device.

### ☐ Intel Graphics

This item allows users to enable or disable IGD.

### ☐ GTT Size

This item allows users to select GTT size.

### ☐ Aperture Size

This item allows users to select aperture size.

### ☐ DVMT Pre-Allocated

This item allows users to select DVMT pre-allocated memory size.

☐ **DVMT Total Gfx Mem**

This item allows users to select DVMT total memory size.

☐ **Gfx Low Power Mode**

This item is applicable for SFF only.

☐ **Graphics Performance Analyzers**

This item enables or disables the Intel Graphics Performance Analyzer counters.

☐ **Primary IGFX Boot Display**

This item allow users to select the video device which will be activated during post.

## 2.21 Memory Information

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Chipset		
Memory Information		
Memory Frequency	1333 Mhz	
Total Memory	2048 MB (DDR3)	
DIMM#0	1024 MB (DDR3)	
DIMM#1	NOT Present	
DIMM#2	1024 MB (DDR3)	
DIMM#3	NOT Present	
CAS Latency (tCL)	9	
Minimum delay time		
CAS to RAS (tRCDmin)	9	
Row Precharge (tRPmin)	9	
Active to precharge (tRASmin)	24	
		<div>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save &amp; Exit ESC: Exit</div>

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## 2.22 Boot Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.		
Main   Advanced   Chipset <b>Boot</b> Security   Save & Exit		
Boot Configuration		Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Setup Prompt Timeout	<b>1</b>	
Bootup NumLock State	[On]	
Quiet Boot	[Disabled]	
Fast Boot	[Disabled]	
CSM16 Module Version		
07.69		
GateA20 Active		→← : Select Screen Enter : Select Item +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Option ROM Messages		
INT19 Trap Response		
[Upon Request] [Force BIOS] [Immediate]		
Boot Option Priorities		
▶ CSM parameters		

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### ☐ Setup Prompt Timeout

This item allows user to change number of seconds to wait for setup activation key.

### ☐ Bootup NumLock State

This item allows user to select the Power-on state for Numlock.

### ☐ Quiet Boot

This item allows user to enable or disable Quite Boot option.

### ☐ Fast Boot

This item allows user to enable or disable boot with initialization of a minimal set of devices required to launch active boot option.

### ☐ GateA20 Active

This item allows user to select upon request or always.



☐ **Option ROM Messages**

This item allows user to set display mode for option ROM.

☐ **INT19 Trap Response**

This item allows option ROMs to trap interrupt 19.

## 2.23 CSM parameters

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Boot		
Launch CSM	[Enabled]	This option controls if CSM Will be launched
Boot option filter	[UEFI and Legacy]	
Launch PXE OpROM policy	[Do not launch]	
Launch Storage OpROM policy	[Legacy only]	
Launch Video OpROM policy	[Legacy only]	
Other PCI device ROM priority [UEFI OpROM]		
		→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1229. Copyright (C) 2012 American Megatrends, INC.		

### ☐ **Launch CSM**

This item controls if CSM will be launched.

### ☐ **Boot option filter**

This item controls what devices system can boot to.

### ☐ **Launch PXE OpROM policy**

This item controls the execution of UEFI and Legacy PXE OpROM.

### ☐ **Launch Storage OpROM priority**

This item controls the execution of UEFI and Legacy Storage OpROM.

### ☐ **Launch Video ROM policy**

This item controls the execution of UEFI and Legacy Video OpROM.

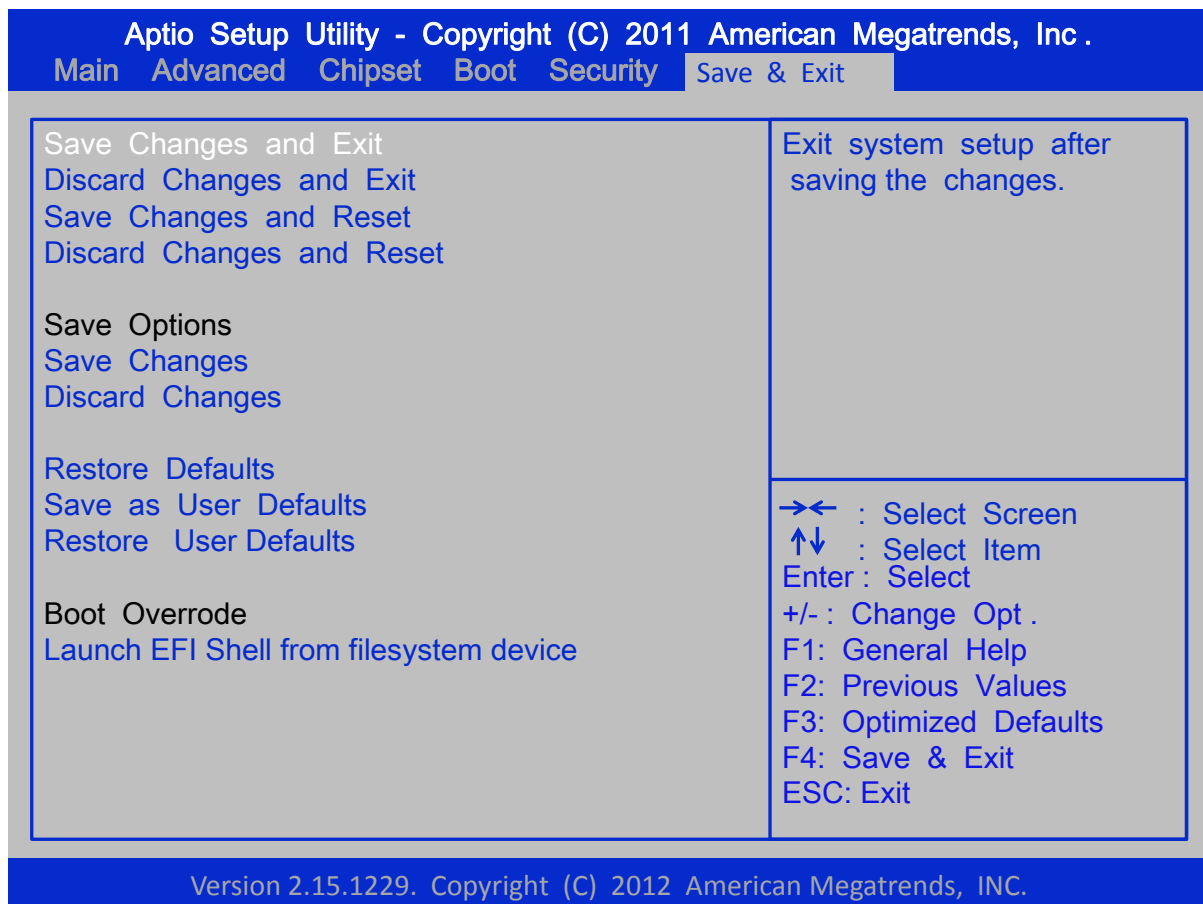
☐ **Other PCI device ROM priority**

For PCI devices other than Network, Mass storage or Video defines which OpROM to launch.

## 2.24 Password Configuration

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Main	Advanced Chipset Boot Security Save & Exit
<p>Password Description</p> <p>If ONLY the Administrator's password is set , then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights. The password length must be in the following range:</p> <p>Minimum length                3 Maximum length                20</p> <p>Administrator Password User Password</p> <p>System Mode state             Setup Secure Boot state              Disabled</p> <p>Secure Boot                    [Enabled] Secure Boot Mode              [Standard]</p>	<p>Set Administrator Password</p> <hr/> <p>→← : Select Screen ↑↓ : Select Item Enter : Select +/- : Change Opt . F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save ESC: Exit</p>

## 2.25 Save Changes and Exit



## Chapter 3 Drivers Installation

This chapter introduces driver installation information.

Please insert the utility CD to CD-ROM drive, the install menu will appear automatically, if the install menu does not list suitable driver of Operate System or appear automatically, please select corresponding driver of utility CD to install.

The Windows XP driver installation steps are as below.

### 3.1 Intel Chipset Device Software

**Step 1.** Click “Next” to continue.



**Step 2.** Read the License Agreement and click “Yes” to continue.



**Step 3.** Click “Next” to continue.



**Step 4.** Click “Next” to continue.



**Step 5.** Click “Finish” to complete setup.





## 3.2 Intel Graphic Media Accelerator Driver

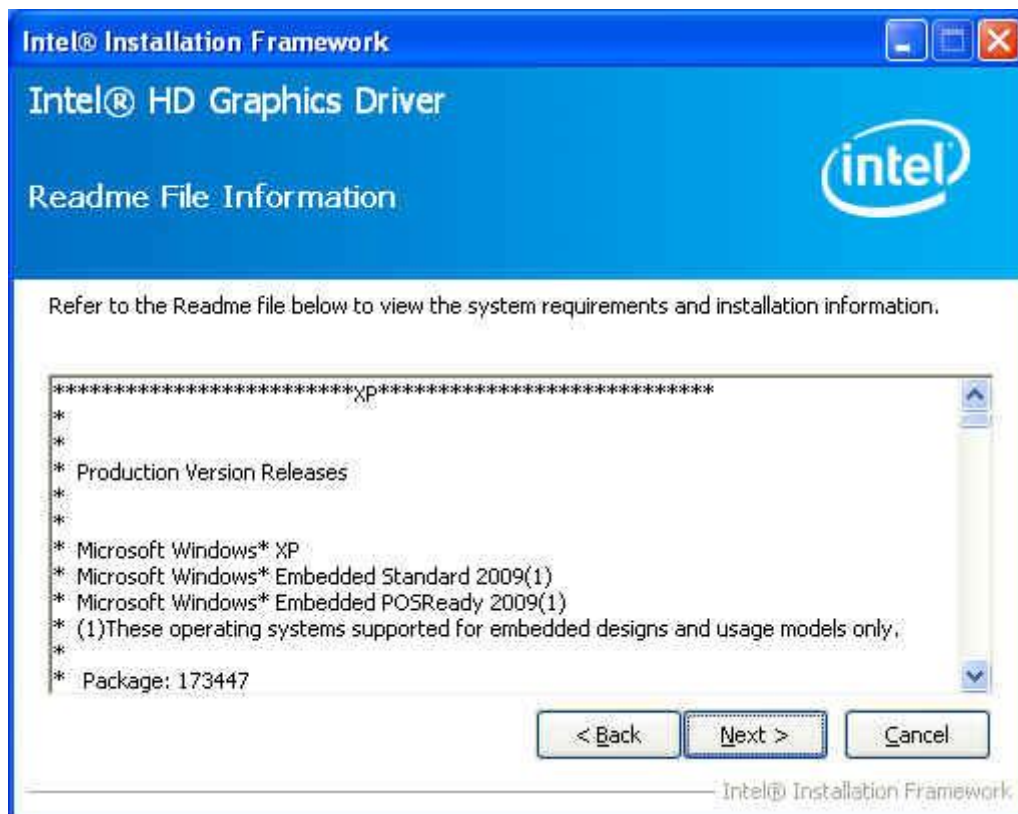
**Step 1.** Click “Next” to continue.



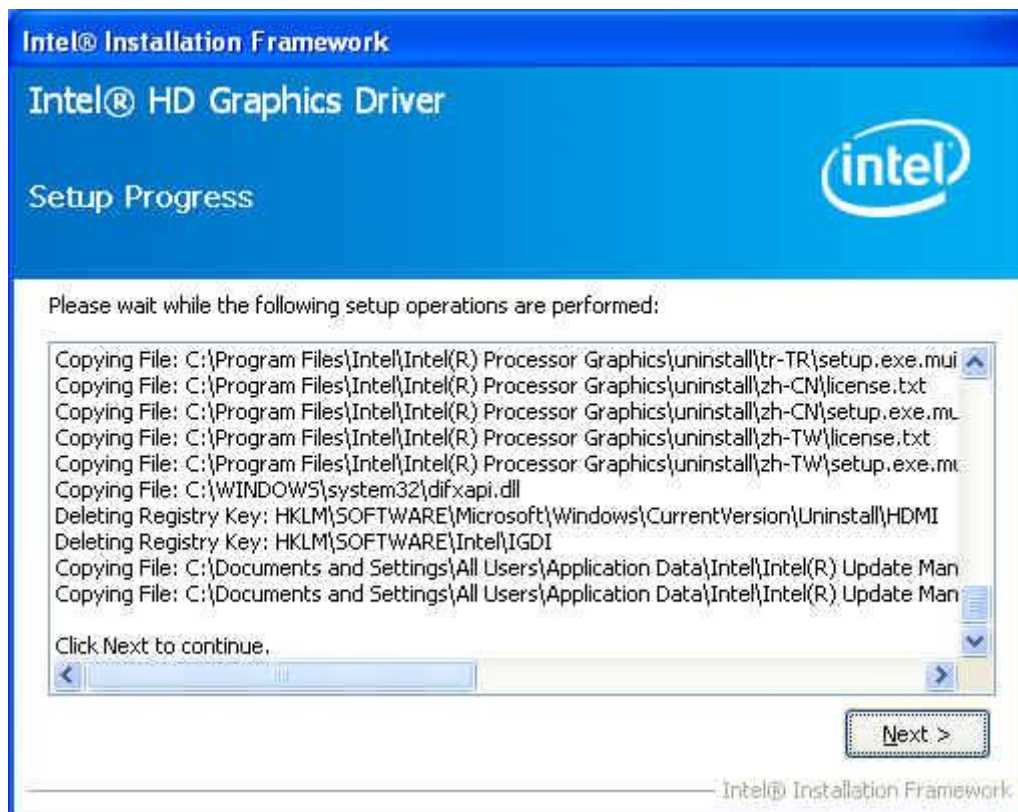
**Step 2.** Click “No” to continue.



**Step 3.** Click “Next” to continue.



**Step 4.** Click “Next” to continue.



**Step 5.** Click “Finish” to complete setup.

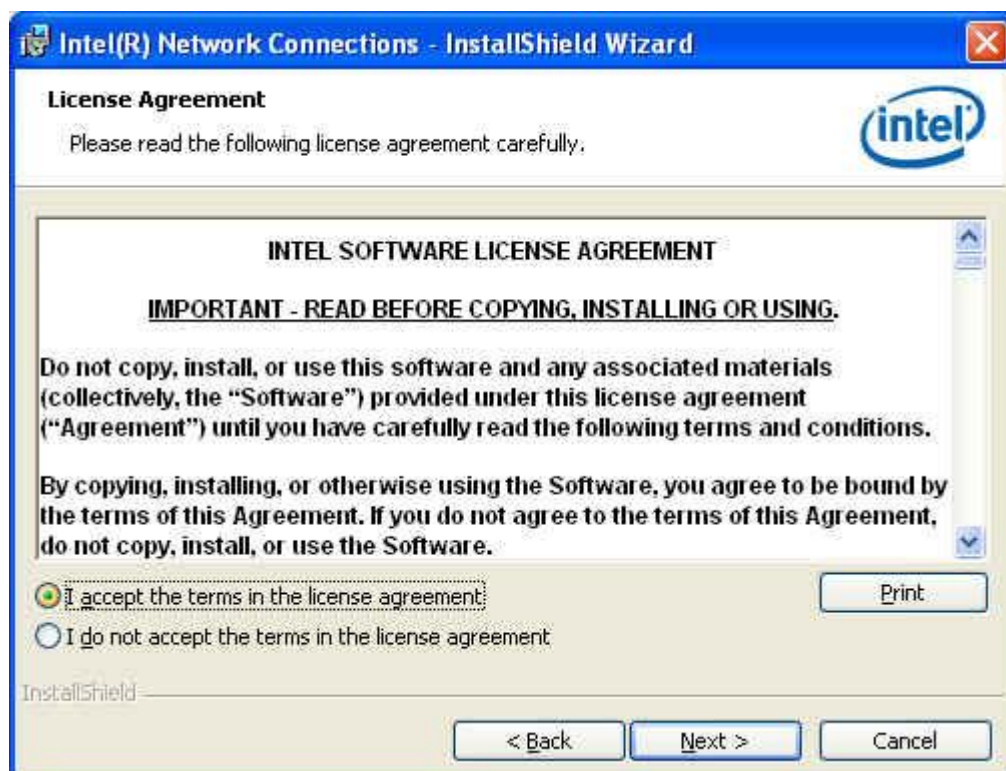


### 3.3 LAN Driver

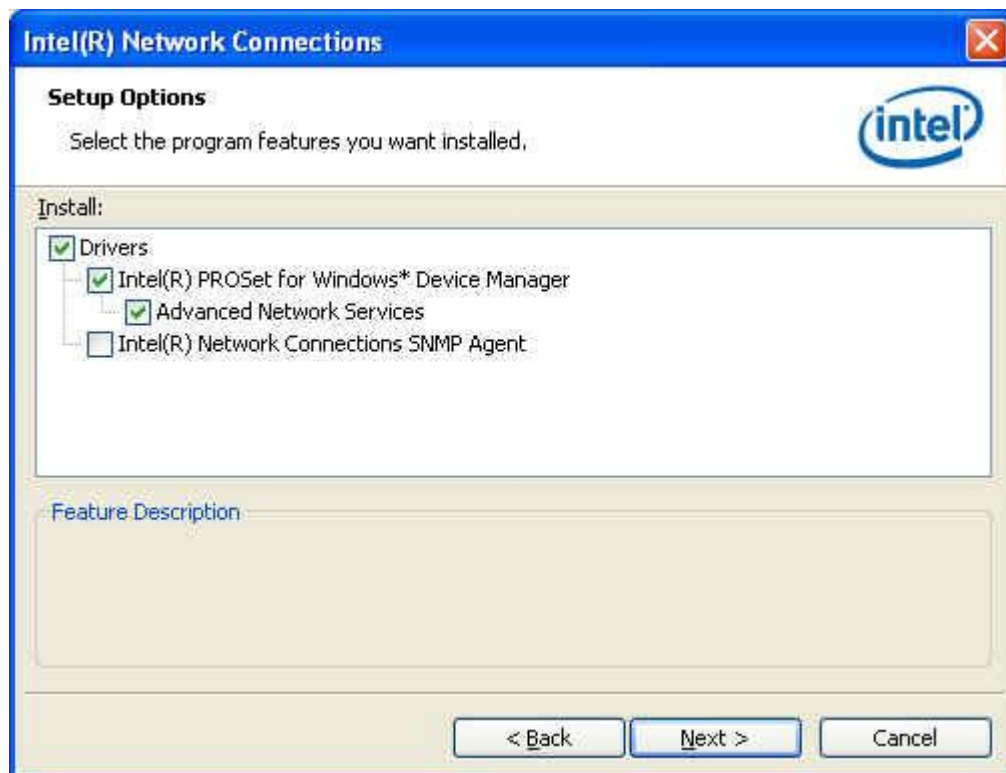
**Step 1.** Click “Next” to continue.



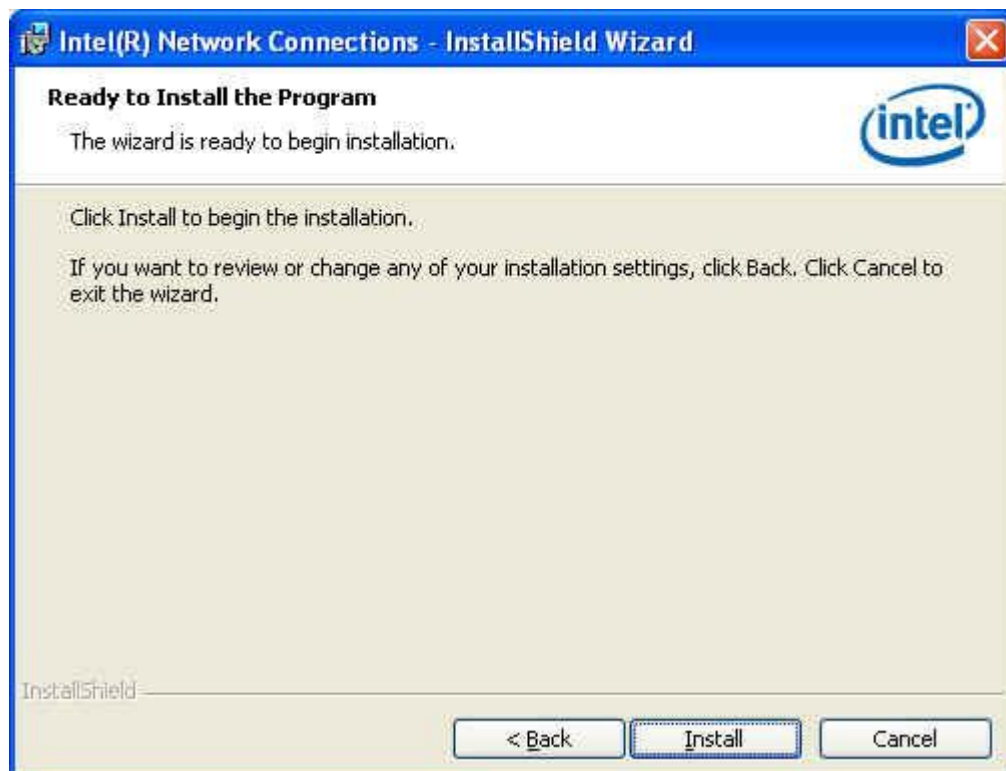
**Step 2.** Click “Next” to continue.



**Step 3.** Click “Next” to continue.



**Step 4.** Click “Install” to continue.



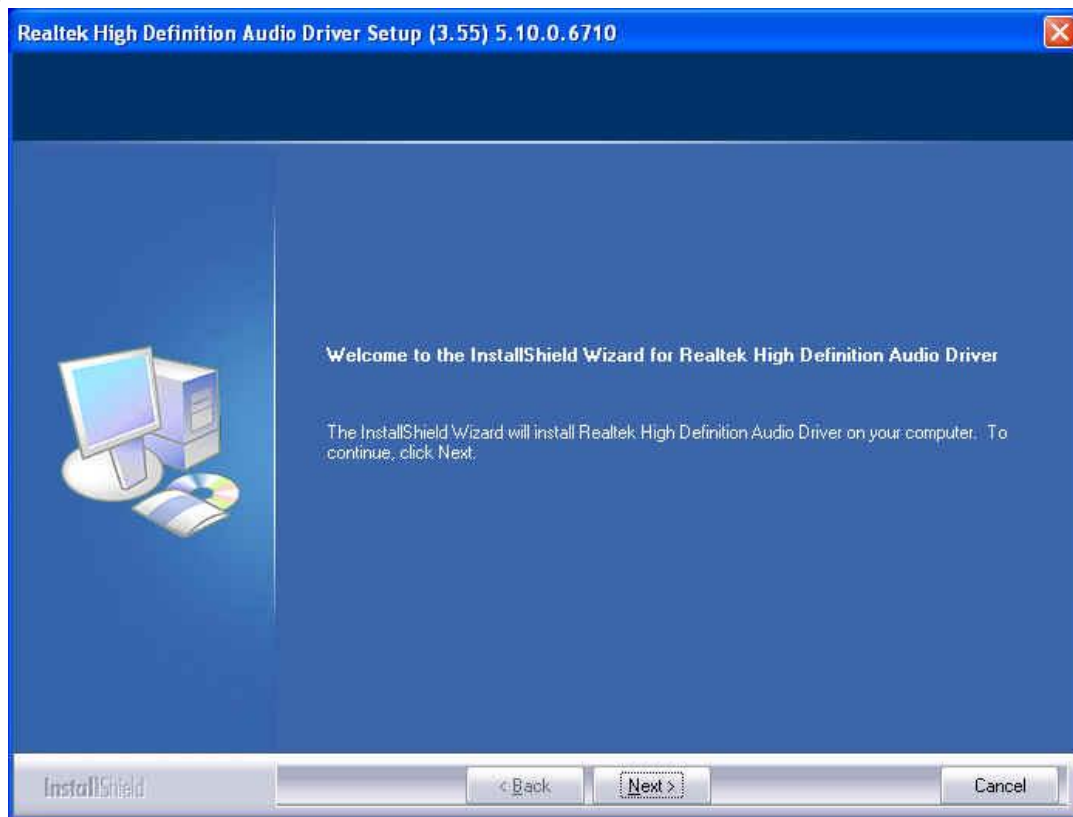


**Step 5.** Click “Finish” to complete setup.

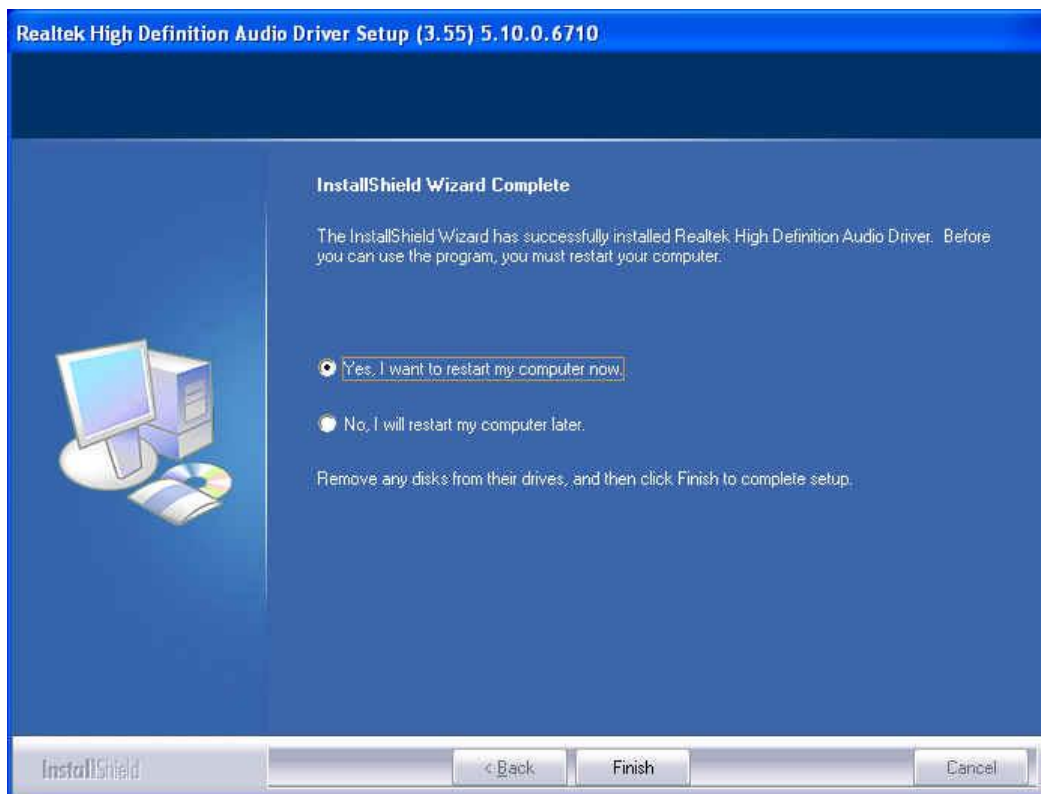


### 3.4 Audio Driver.

**Step 1.** Click “Next” to continue.



**Step 2.** Click “Yes” to complete setup.



## Appendix-A Watchdog

The working algorithm of the WDT function can be simply described as a counting process. The Time-Out Interval can be set through software programming. The availability of time-out interval is set by software.

The System Board allows users control WDT through dynamic software programming. The WDT starts counting when it is activated. It sends out a signal to system reset, when time-out interval ends. To prevent the time-out interval from running out, a re-trigger signal will need to be sent before the counting reaches its end. This action will restart the counting process.

WDT program should keep the counting process running under normal condition. WDT should never generate a system reset unless the system runs into troubles.

The related Control Registers of WDT are all included in the following sample program that is written in C language. User can fill a non-zero value into the Time-out Value Register to enable/refresh WDT. System will be reset after the Time-out Value to be counted down to zero. Or user can directly fill a zero value into Time-out Value Register to disable WDT immediately.

To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

For more information about WDT, please refer to Winbond W83627EHF data sheet.

There are two PnP I/O port addresses that can be used to configure WDT,

- 1) 0x2E: EFIR (Extended Function Index Register, for identifying CR index number)
- 2) 0x2F: EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of WDT.



```

// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);

// Assign Pin 77 to be a WDTO# Signal
outp(0x002E, 0x2D);
outp(0x002F, inp(0x002F) & 0xFE);

// Select Logic Device 8
outp(0x002E, 0x07);
outp(0x002F, 0x08);

// Active Logic Device 8
outp(0x002E, 0x30);
outp(0x002F, 0x01);

//Clear WDTO# Status
outp(0x002E, 0xF7);
outp(0x002F, inp(0x002F) & 0xEF);

// Select Count Mode (Second / Minute)
outp(0x002E, 0xF5);
outp(0x002F, (inp(0x002F) & 0xF7) | (Count-mode Register & 0x08));

// Set Time-out Value
outp(0x002E, 0xF6);
outp(0x002F, Time-out Value Register);

// Exit Extended Function Mode
outp(0x002E, 0xAA);

```

### **Definitions of Variables:**

- Value of Count-mode Register:
- 1) 0x00 -- Count down in seconds (Bit3=0)
  - 2) 0x08 -- Count down in minutes (Bit3=1)
- Value of Time-out Value Register:
- 1) 0x00 -- Time-out Disable
  - 2) 0x01~0xFF -- Value for counting down

## Appendix-B GPIO

The System Board provides 4 dedicated output ports and 4 programmable I/O ports that can be individually configured to perform a simple I/O function. Users can configure 4 programmable I/O ports to become an input or output port by programming register bit of I/O Selection. *To invert port value, the setting of Inversion Register has to be made* (Note). Port values can be set to read or write through Data Register.

Note: Only 4 programmable I/O ports support.

Additionally, 4 Digital Output ports amplified signals from GPIO ports. There are open-drain buffers, which can offer greater driving capacity up to 100mA.

For more information about GPIO, please refer to Winbond W83627EHF data sheet.

The related Control Registers of GPIO are all included in the following sample program that is written in C language. To ensure a successful accessing to the content of desired Control Register, the sequence of following program codes should be step-by-step run again when each register is accessed.

There are two PnP I/O port addresses that can be used to configure GPIO ports,

- 1) 0x2E - EFER (Extended Function Enable Register, for entering Extended Function Mode)
  - EFIR (Extended Function Index Register, for identifying CR index number)
- 2) 0x2F - EFDR (Extended Function Data Register, for accessing desired CR)

Below are some example codes, which demonstrate the use of GPIOs.

```
// Enter Extended Function Mode
outp(0x002E, 0x87);
outp(0x002E, 0x87);

// Assign Pin121-128 to be GPIO port
outp(0x002E, 0x29);
outp(0x002F, inp(0x002F) | 0x01);
```

```

// Select Logic Device 7
outp(0x002E, 0x07);
outp(0x002F, 0x07);

// Active Logic Device 7
outp(0x002E, 0x30);
outp(0x002F, 0x01);

// Select Inversion Mode
outp(0x002E, 0xF2);
outp(0x002F, (inp(0x002F) & 0x3C) | (Inversion Register & 0xC3));

// Select I/O Mode
outp(0x002E, 0xF0);
outp(0x002F, (inp(0x002F) & 0x3C) | (I/O Selection Register & 0xC3));

// Access GPIO ports
outp(0x002E, 0xF1);
outp(0x002F, (inp(0x002F) & 0x3C) | (Output Data & 0xC3));
or
Input Data = inp(0x002F);

// Exit Extended Function Mode
outp(0x002E, 0xAA);

```

### **Definitions of Variables:**

Each bit in the lower nibble of each Register represents the setting of a GPIO port.

Super IO Pin	Bit	GPIO DIO
128	0	GPIO DIO-Out0
127	1	GPIO DIO-Out1
126	2	GPIO DIO-In0
125	3	GPIO DIO-In1
124	4	GPIO DIO-In2
123	5	GPIO DIO-In3
122	6	GPIO DIO-Out2
121	7	GPIO DIO-Out3

Value of **Inversion Register**:

When set to a '1', the incoming/outgoing port value is inverted.

When set to a '0', the incoming/outgoing port value is the same as in Data Register.

Value of **I/O Selection Register**:

When set to a '1', respective GPIO port is programmed as an input port.

When set to a '0', respective GPIO port is programmed as an output port.

Value of **Output Data** / **Input Data**:

If a port is assigned to be an output port, then its respective bit can be read/written.

If a port is assigned to be an input port, then its respective bit can be read only.

Note:

**DIO\_IN0/DIO\_IN1/DIO\_IN2/DIO\_IN3** is programmed as **Inputs** by BIOS default.

Parameter	Conditions
VinH	min +1.857V
VinL	max +0.525V
Rated Vin	-8V ~ +12V
NC Status	High by Default

\*\* Attention: If **DIO\_IN0/DIO\_IN1/DIO\_IN2/DIO\_IN3** is programmed as Output signal, they can only offer a normal signal transfer (NOT amplified signals).

Parameter	Conditions
VoutH	3.3V thru 10k
VoutL	0V thru 1k

**DIO\_OUT0/DIO\_OUT1/DIO\_OUT2/DIO\_OUT3** is fixed as **Outputs** by BIOS.

Parameter	Conditions
Open-drain buffer	Power-on default = Open
Driving Capacity	max 100mA continue